PC Project:

Ward Off The Warmth

Cool Your System With A Better Heatsink

You can all but see the heat waves coming out of your PC's case. The problem is the PC's standard-issue CPU heatsink.

Its job is to draw heat away from the blistering-hot processor—and it does that job, but not very efficiently. By replacing it with an aftermarket heatsink, you can transform your PC into a cool oasis.

The primary benefit of replacing your PC's stock heatsink is improved cooling. You don't have to choose one or the other: Many aftermarket heatsinks provide cooler operation than manufacturer-supplied standard CPU coolers.

In order to choose a heatsink that is compatible with your hardware, you'll need to know the model of motherboard and type of processor in your PC. For the example here, we used the Nexus AXP-3200 ($32.95), a heatsink and fan for AMD Socket 462 systems, available from EndPCNoise.com (http://endpcnoise.com). Many heatsinks come with fans attached, and while it's not absolutely necessary to replace the fan when you replace the heatsink, it'll make your PC run that much cooler and quieter.

A heatsink rests directly on the CPU (separated only by a thin later of thermal paste, which we'll get to in a moment). As the CPU works, the heat it generates is transferred to the heatsink. A fan atop the heatsink draws the heat through and blows it away. A heatsink that uses better conducting materials can pull more heat away from the processor. An all-copper heatsink will do a better job of dissipating heat than an aluminum one, for example. However, copper is heavier than aluminum. A heatsink that's too heavy could damage the CPU if the computer is jostled or moved without care. Again, choose a heatsink that is compatible with your CPU.

Equally important is the fan, which is screwed to the heatsink. Aftermarket cooling setups often utilize fans with larger blades, allowing them to move more air with less noise. Some models

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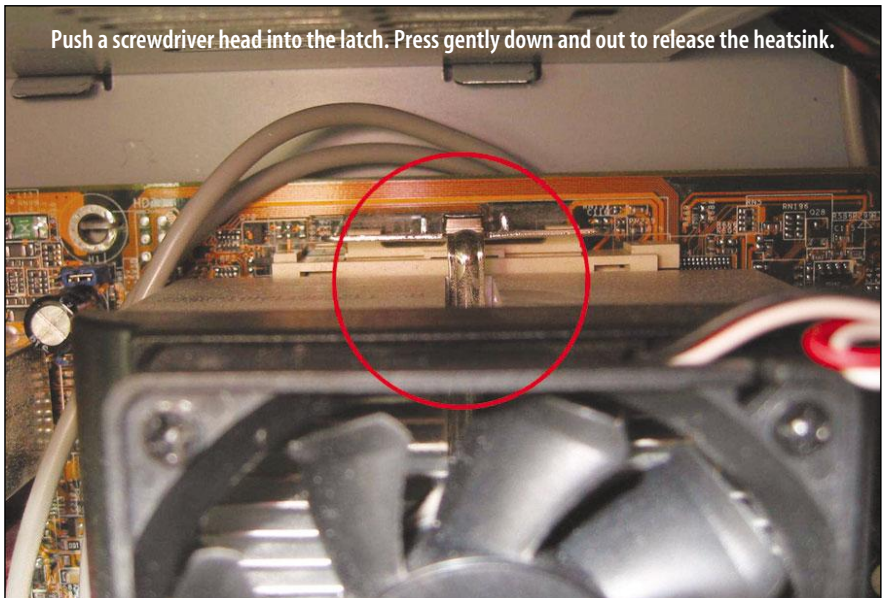
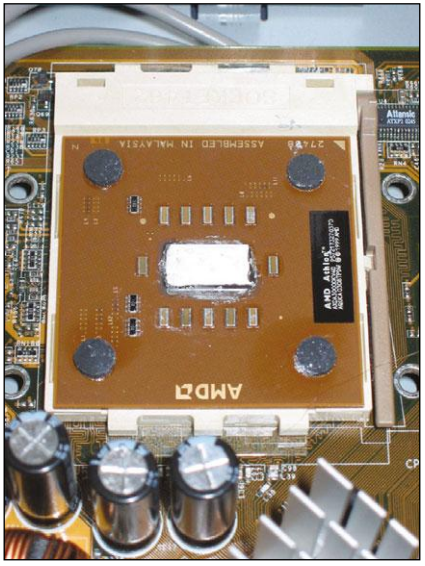
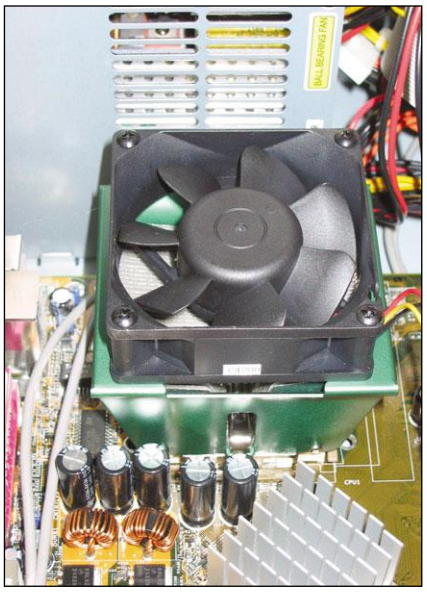


Push a screwdriver head into the latch. Press gently down and out to release the heatsink.



Here, we've applied a fresh coat of thermal paste to the CPU.



A new heatsink and fan installed on a cool CPU.

include a knob that lets you control the speed of the fan, from ultra quiet (that run hotter) to less quiet (but cooler). Keep in mind that even though replacing your heatsink can do your PC a world of good, it will likely void your warranty.

The Fine Print

Now that you have the basics down, let's get started.

Unplug the fan. The first step is to open the PC case to reveal the heatsink and fan. (Be sure to ground yourself by touching a metal surface or wearing an antistatic wristband before touching the inside of the case.) You'll notice two thin wires that run from the fan to a plug on the motherboard. Unplug the fan from the motherboard by gently pulling on the connector.

Remove the old heatsink and fan. The next step is to remove the heatsink and fan. The procedure will differ depending on your particular heatsink, so take a moment to deduce how to remove yours. On Pentium 4 systems, screws or a plastic clamp may hold the heatsink in place. On AMD models, a latch secures the heatsink to the CPU. Use a flathead screwdriver to press gently down and outward until the latch releases. This can be the trickiest part—too much pressure can damage the CPU, or a slipped screwdriver could damage the motherboard.

No matter how the heatsink is secured, it and the fan should come apart from the CPU as one unit. You may notice screws on top of the fan that secure it to the heatsink: There should be no need to unscrew them.

Once the heatsink and fan are unfastened, gently pull it from the CPU. A layer of sticky thermal compound may still adhere them. If so, use a flathead screwdriver to gently pry them apart.

Clean the processor. The tricky part is done. With the heatsink removed, you'll find some thermal paste stuck on the CPU. To remove the paste, gently scrape the processor with a butter knife or other flat tool. Don't gouge the processor—you don't want to give it a lobotomy. Apply a few drops of rubbing alcohol to a lint-free cloth to remove any gooey smudges that remain.

Apply fresh thermal paste. Your new heatsink should include thermal paste in a small tube or bag. The paste provides a buffer between the CPU and heatsink that helps heat transfer. Apply some of the paste to the CPU. Put a small amount of paste on the CPU (you probably won't need all of it) and spread it across the surface with a flat-edged surface: a credit card or toothpick works well. You want a thin, even coating across the CPU, like icing on a cake.

Some heatsinks have preapplied thermal paste; in this case, skip this step.

Install the new heatsink. Install the new heatsink on the CPU. Be sure to mount the new heatsink in the same orientation as the old, for instance, with the latch on the same side. Use a flathead screwdriver to work the latch.

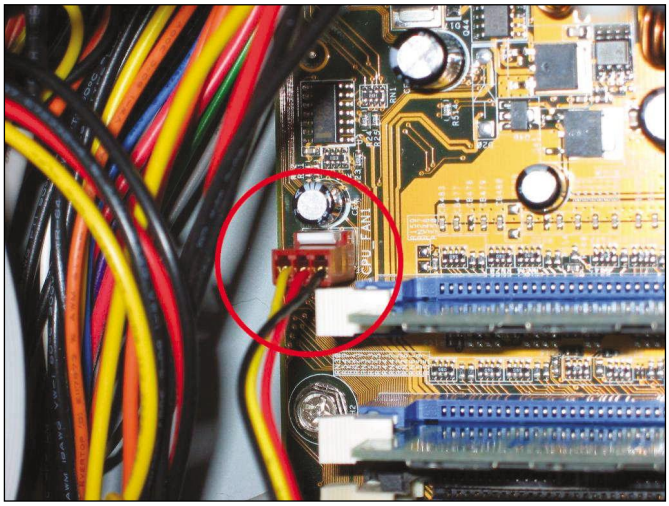
Plug the new fan into the power socket on the motherboard. Close the computer, plug it in, and turn it on. Installation is complete.

It Works

That's it—your CPU is running cooler and quieter than ever before. On the system we upgraded in this article, the effect was unmistakable. Our CPU, working at maximum load for 10 minutes, ran at about 123 degrees Fahrenheit using the stock heatsink. Under the same workload with the aftermarket heatsink, the CPU temperature dropped about 12 degrees. The PC is noticeably quieter, too, thanks to the new fan attached to the heatsink.

The whole process should cost $30 to $50 for a replacement heatsink and take about 15 minutes from start to finish. That's a small investment to turn your PC into a cool and quiet oasis. ❚❚

By Kevin Savetz



This tiny connector provides power to the CPU fan. Don't forget to reconnect the replacement fan once the new heatsink is installed.